



ATTORNEY DOCKET NO.: KCX-460 (17071)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Philip S. Lin, et al.)
)
Serial No.: 10/029129) Examiner: Unknown
)
Filed: December 20, 2001) Art Unit: Unknown
)
For: Method and Apparatus for)
Caliper Control of a Fibrous Web)

PRELIMINARY AMENDMENT

Box Amendment
Commissioner for Patents
Washington, DC 20231

Sir:

Prior to examination of this application on the merits, please amend the above-identified application as set forth below and consider the remarks that follow.

IN THE SPECIFICATION

Please replace the second full paragraph on page 3 of the specification with the following paragraph (a marked-up copy of the originally filed page 3 is attached).

In one aspect of the invention, the pressure may be applied manually via a set of calender rolls in which the calender rolls are incrementally moved toward the web as the parent roll is formed. For instance, the calender rolls may be controlled by a human operator to move the calender rolls toward the web. This control could be accomplished in various ways (i.e., pneumatic and hydraulic cylinders, block and tackle weights, embossing wedges, etc.).

Please replace the last paragraph on page 3 of the specification, which extends onto page 4 of the specification with the following paragraph (marked-up copies of the originally filed pages 3 and 4 are attached).

Alternatively, an open loop control of the nip pressure may be employed in which, for example, a mathematical computer algorithm automatically increases the pressure as functions of time, reel length or roll diameter. More specifically, the algorithm can be programmed to automatically adjust the nip pressure over time, with the use of, e.g., a flow meter, a length of passing web, or when a diameter is physically reached.

TITLE PAGE

Please replace the Title page of the application with the enclosed new Title page (a marked-up copy of the originally filed Title page is also attached).

REMARKS

Applicants respectfully submit that the changes to the Specification add no new matter and merely clarify the originally filed Specification, claims, and drawings. The substitute Title page adds an inventor name, which was inadvertently overlooked at the time of filing the present application. A Combined Declaration and Power of Attorney for Joint Inventors is forthcoming and properly includes all inventors of the present application in accordance with 37 C.F.R. §1.48 (f) (1) and as shown on the substitute Title page.

Applicants further respectfully submit that all pending claims are patentable in view of the above Preliminary Amendment and respectfully request consideration and examination of the present Application and the timely allowance of the pending claims.

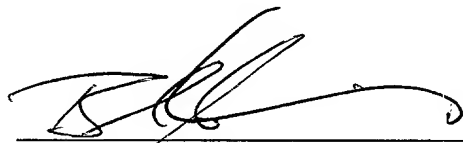
The examiner is encouraged to contact the undersigned at his convenience should he have any questions regarding these matters.

Please charge any fees required by this Amendment to Deposit Account No. 04-1403.

Respectfully submitted,

DORITY & MANNING, P.A.

Date: 2-1-02



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UNITED STATES PATENT APPLICATION

OF

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FOR

METHOD AND APPARATUS FOR CALIPER CONTROL OF A FIBROUS WEB

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0-69095-7



OF

FOR

METHOD AND APPARATUS FOR CALIPER CONTROL OF A FIBROUS WEB



steps in forming the paper web. Some examples of such techniques are disclosed in U.S. Patent Nos. 5,048,589 to Cook, et al., 5,399,412 to Sudall, et al., 5,129,988 to Farrington, Jr. and 5,494,554 to Edwards, et al., which are incorporated herein by reference.

5 According to an aspect of the invention, a method for increasing caliper control of a cellulosic fiber-containing web as the web is wound onto a roll is disclosed. The method includes the step of winding a fibrous web onto a roll to form a wound product. Prior to begin wound, the web is conveyed through a nip. The nip is configured to apply a pressure to the web and to selectively decrease the caliper of the web by increasing the pressure. Specifically, the nip pressure is increased as the diameter of the wound product increases in order to compensate for the caliper reduction that occurs in the web near the center of the wound roll due to compressive forces that are excited on the web as the diameter of the roll increases.

10 In one aspect of the invention, the pressure may be applied manually via a *set of* calender rolls in which the ^{rolls} ~~calendar roll~~ ^{are} ~~is~~ incrementally moved toward the web as the parent roll is formed. For instance, ~~a mechanical arm attached to the~~ calendar ^{roll} may be controlled by a human operator to move the calendar roll toward the web. *This control could be accomplished in various ways; i.e., pneumatic and hydraulic cylinders, block and tackle weights, embossing wedges, etc*

20 Alternatively, an open loop control of the nip pressure may be employed in which, for example, a mathematical computer algorithm automatically increases the pressure as functions of time, reel length, or roll diameter. More specifically,

the algorithm can be programmed to automatically adjust the nip pressure over time, or with the use of, e.g., a flow meter, a length of passing web, or when a desired diameter is physically reached. ~~The diameter, for instance, may be realized by the open-loop system when a contact sensor is contacted by a~~
 5 ~~surface of the parent roll when the desired diameter is reached.~~

Another exemplary embodiment may incorporate an on-line caliper sensor to allow a closed-loop feedback control of web caliper. This aspect of the invention may be dependent on the building diameter of the parent roll, which may be determined by the steps of monitoring the caliper of the fibrous web with a sensing device and then adjusting the pressure based on measurements of the caliper from the sensing device. Optionally, the sensing device can be supplemented by a computer to automatically adjust the calender gap or nip pressure in precise micro-adjustments as a function of the building roll diameter D. Alternatively stated, a remote computer can be configured to send commands to adjust the calender roll in small increments toward the web as the diameter of the parent roll increases.

According to another aspect of the invention, nip pressure to a tissue may occur in a converting line as the tissue is being unwound from the parent roll and wound onto a secondary roll or onto a packaging roll. The method may comprise
 20 the steps of monitoring the caliper of the tissue with a sensor and controlling the pressure of, for instance, a calendering device, based on measurements of the